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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/939,773	08/28/2001	Koji Kikuchi	SON-2192	3157
23353	7590	11/12/2003	EXAMINER	
RADER FISHMAN & GRAUER PLLC LION BUILDING 1233 20TH STREET N.W., SUITE 501 WASHINGTON, DC 20036			COLEMAN, WILLIAM D	
			ART UNIT	PAPER NUMBER
			2823	

DATE MAILED: 11/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/939,773

Applicant(s)

KIKUCHI, KOJI

Examiner

W. David Coleman

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments, filed September , with respect to the rejection(s) of claim(s) 1-10 under 35 U.S.C. 103(a) as being unpatentable over Kung et al., U.S. Patent Application Publication No. 2002/0171825 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Kung U.S. Patent 6,396,944 B1.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kung et al., U.S. Patent 6,396,944 B1.

Kung discloses a manufacturing method substantially as claimed.

3. Pertaining to claim 1, Kung teaches a manufacturing method of a phase-shift mask, comprising: seeking a relationship of optical conditions of an exposure optical system used for exposure and a mask structure with displacement of a pattern to be transferred by exposure; finding said optical conditions and said mask structure that limit displacement of said pattern within a required range, taking manufacturing errors of the mask into consideration; examining the optical conditions and the mask structure obtained to determine whether they ensure a required exposure tolerance and a required focal depth; and executing fabrication of such a mask

to obtain said mask structure when the result of the examination is acceptable. However, the terms “seeking a relationship of optical conditions”, “examining the optical conditions” and “determine” are mental process steps. It would have been obvious to one of ordinary skill in the art that these mental process steps takes place in the Kung's semiconductor process in the fabrication of phase shift mask.

4. Pertaining to claim 2, Kung teaches the manufacturing method of a phase-shift mask according to claim 1 wherein said optical conditions include, at least, a numerical aperture [0015] and a partial coherence factor.

5. Pertaining to claim 3, Kung teaches the manufacturing method of a phase-shift mask according to claim 1 wherein said phase-shift mask is a Levenson phase-shift mask.

6. Pertaining to claim 4, Kung teaches the manufacturing method of a phase-shift mask according to claim 3 wherein said Levenson phase-shift mask is of a substrate-excavation-type, and said mask structure is regulated by the amount of excavation of a substrate.

7. Pertaining to claim 5, Kung teaches the manufacturing method of a phase-shift mask according to claim 1 wherein said Levenson phase-shift mask is of a phase-shifter-added-type, and said mask structure is regulated by the thickness of a phase shifter.

8. Pertaining to claim 6, Kung teaches a method of making a resist pattern through exposure using a phase-shift mask, comprising:
seeking a relationship of optical conditions of an
exposure optical system used for exposure and a mask structure of
said phase-shift mask with displacement of a pattern to be
transferred by exposure;

finding said optical conditions and said mask structure that limit displacement of said pattern within a required range, taking manufacturing errors of the mask into consideration; examining the optical conditions and the mask structure obtained to determine whether they ensure a required exposure tolerance and a required focal depth; and when the result of the examination is acceptable, fixing said exposure optical system to the optical conditions selected, then actually manufacturing said phase-shift mask having the mask structure selected, and conducting exposure using said exposure optical system and said phase-shift mask. However, Kung fails to use the terms "finding", and "examining". It would have been obvious to one of ordinary skill in the art that these mental process steps takes place in the Kung's semiconductor process in the fabrication of phase shift mask.

9. Pertaining to claim 7, Kung teaches the method of making a resist pattern according to claim 6 wherein said optical conditions include, at least, a numerical aperture and a partial coherence factor.

10. Pertaining to claim 8, Kung teaches the method of making a resist pattern according to claim 6 wherein said phase-shift mask is a Levenson phase-shift mask.

11. Pertaining to claim 9, Kung teaches the method of making a resist pattern according to claim 8 wherein said Levenson phase-shift mask is of a substrate-excavation-type, and said mask structure is regulated by the amount of excavation of a substrate.

12. Pertaining to claim 10, Kung teaches the method of making a resist pattern according to claim 8 wherein said Levenson phase-shift mask is of a phase-shifter-added-type, and said mask structure is regulated by the thickness of a phase shifter.

Double Patenting

13. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

14. A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

15. Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

16. Claims 1-10 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 and 10 of U.S. Patent No. 6,391,501 B1. Although the conflicting claims are not identical, they are not patentably distinct from each other because seeking a relationship of optical conditions for exposure and a mask structure is merely nothing more than the equivalent of the step of determining and/or performing shapes of phase shift patterns as claimed in the patented invention.

Conclusion

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to W. David Coleman whose telephone number is 703-305-0004. The examiner can normally be reached on 9:00 AM-5:00 PM.

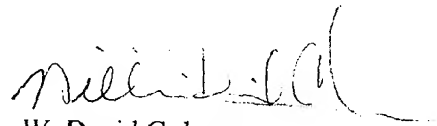
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18. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 703-306-2794. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

19. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.



W. David Coleman
Primary Examiner
Art Unit 2823

WDC